VDOT
Virginia Department of Transportation

2011 Annual Report

Hampton Roads Transportation Operations Center

Hampton Roads Transportation Operations Center Annual Report 2011

I am pleased to share with you the 2011 Hampton Roads Transportation Operations Center Annual Report. The goal of this report is to keep the public informed about our services and performance.
Many new and exciting changes are currently taking place to enhance driver mobility and help ease congestion issues in Hampton Roads. This year will see a dedicated Travel Time project established in Hampton Roads advising motorists of driving times and distances along I-64. Coupled with that, a driver assistance project called "Reach the Beach" will provide motorists driving to Hampton Roads from outside the area travel with times and alternate routes to reach the Hampton Roads area. To complete this work, numerous message signs are being replaced and roadway sensors and software updates are being installed as part of this project. Additionally, the Safety Service Patrol is being doubled from current status to assist with emergency response and emergency management and to assist motorists in their travels. Additional routes and expanded service on the Peninsula will be included in the expansion. Our upgrade modifications to our control room have been completed, making a state-of-the art facility and hopefully improving service to the public.

The hard work of 2010 continued into 2011 and our goal is to ensure that we improve driver information and safety in the area now and into the future. I am sure you will enjoy the report.

Sincerely,

Stephen Boyce
Facility Manager

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Hampton Roads Transportation Operations Center
2011 Performance Highlights

The Hampton Roads Transportation Operations Center (HRTOC) consists of two groups (Maintenance and Operations) that are divided into nine departments (Inventory Management, Fleet Asset, Information Technology, Field Maintenance, Systems Maintenance, Depot Maintenance, Control Room, Safety Service Patrol, and Bridge/Tunnel Operations). These departments work together to achieve decreased incident times, enhanced traveler information and timely assistance to motorists.

2011 Recaps

- The Safety Service Patrol average response time to an incident was 9 minutes.
- Average clearance time for incidents when the Safety Service Patrol was on scene was 21 minutes.
- There were 68,858 events logged by the Control Room Operators; a 6% increase over 2010, with an average of 95 disabled vehicle events logged per day.
- 44% of all events were detected by the Safety Service Patrol and 21% by Closed-Circuit Television (CCTV) cameras in the Control Room.
- The Safety Service Patrol drove 1,807,033 miles, responded to 40,603 incidents, and assisted 22,919 motorists.
- 15.1% of events had a duration of greater than 30 minutes, a 2% decrease from 2010.

Training and Safety

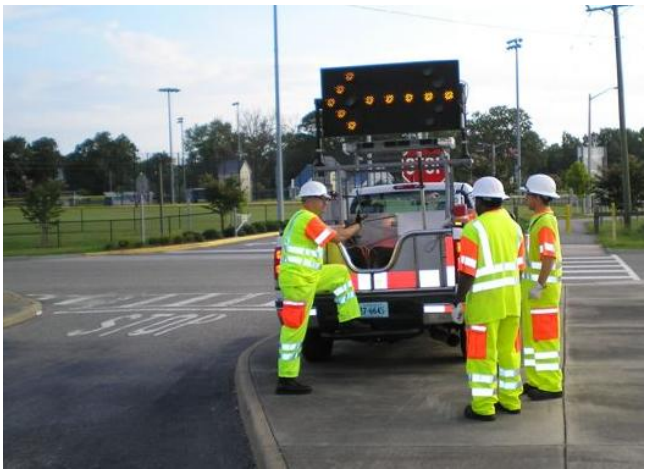
Training that enhances safety standards.

Key Accomplishments in 2011:

- November marked one full year since the occurrence of a lost-work-time or restricted-duty on-the-job injury at the HRTOC.

- The continued emphasis on near miss reporting allowed training to be modified to help prevent a future near miss from turning into an accident.

- New training courses were added to the curriculum for the new Automated External Defibrillators (AED) installed at HRTOC and a new software program, the Lane Closure Advisory Management System (LCAMS)



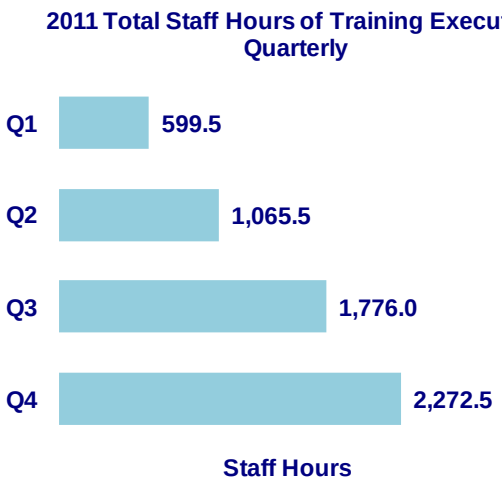
The Hampton Roads Transportation Operations Center (HRTOC) remains training-focused to ensure that all employees are equipped with the skill sets required to safely and efficiently perform their job functions. Training components, including lesson plans and materials, are specifically developed for transportation operations and for HRTOC personnel.

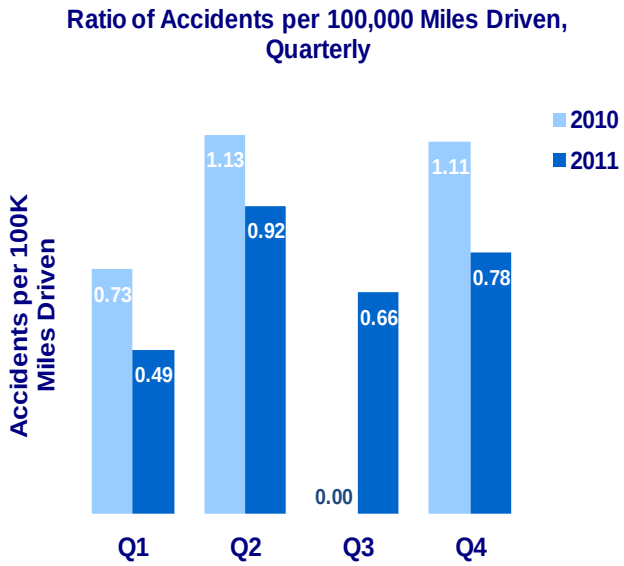
The HRTOC trainer offers formal training programs, certifications and structured classes. In 2011 5,712.5 training hours were completed. That is over a 500% increase in the number of hours completed from 2010. The extreme increase is due to the expansion of the safety service patrol (SSP) department that occurred in 2011; over 70% of training hours completed during the year were for the SSP.

In addition to formal training programs, safety meetings are held before each SSP work-shift to address current issues and to reinforce the importance of a safe work ethic.

In 2011 the HRTOC SSP department drove more than 1.8 million miles. That is equal to more than 72 trips around the Earth!

The SSP were involved in 14 accidents in 2011. Of the 14 accidents 9 were considered out of the patroller's control. A SSP truck was struck by a motorist's vehicle either while at a scene or while patrolling 6 times in 2011.





VDOT Hampton Roads TOC

IT, Fleet Asset and Inventory Management

Behind the scenes keeping it up and running.

Key Accomplishments in 2011:

- In March, the Inventory Management Department was recognized by the VDOT District Inventory Manager for maintaining the HRTOC as the "ideal example of what all stock locations should be".

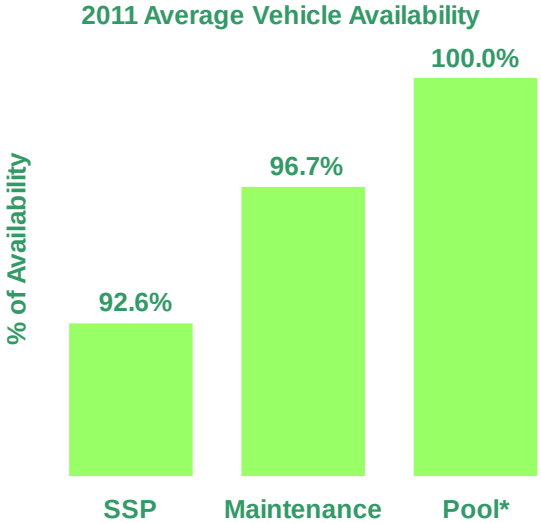
- The Fleet Maintenance Department used creative thinking to respond quickly to a special request from the VDOT Deputy Commissioner for additional SSP trucks. Ten extended cab pickups were modified to receive the SSP-in-a-Box frames and were entered into service by the end of the year.

- IT resources were expanded in the control room in conjunction with the control room renovations.

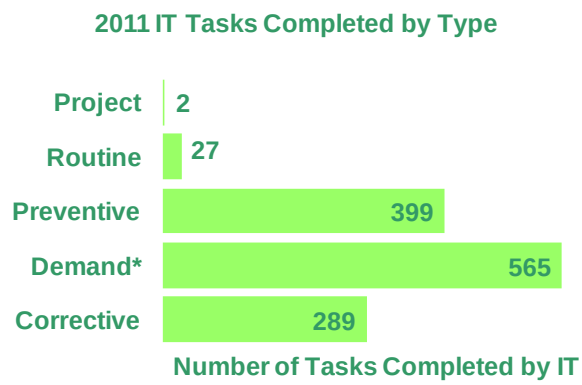
The inventory management department supplies all members of HRTOC with the equipment and assets needed to complete their tasks. In 2011 a new bar code system was implemented to aid with accurately maintaining over $250,000 in state inventory and almost $1 million in federal inventory. Once again all state and federal audits were at 100%.

The fleet asset department is responsible for providing safe and reliable vehicles for the HRTOC SSP and maintenance departments. In addition there are four pool vehicles used by a variety of employees at the HRTOC to attend meetings or visit other local VDOT facilities. In 2011 the fleet maintenance department was able to maintain an average availability of 100% for pool vehicles while completing 270 oil changes and 255 air and fuel filter changes on all vehicle types.

There are over 120 employees at the HRTOC, all requiring access to communication systems. The IT Department procures, installs and maintains all related equipment and software. In 2011, IT completed almost 900 requests for service while making improvements to the HRTOC network and servers. The network infrastructure was upgraded to utilize managed layer 2 and layer 3 switches throughout the campus and servers were made more resilient through the addition of failover clusters for the most critical servers. Additionally, a storage area network was implemented and the HRTOC firewall was upgraded.



*Pool vehicles are general use vehicles provided for local travel by HRTOC Management.



*Demand refers to an urgent request

VDOT Hampton Roads TOC

Maintenance

Keeping information sources ready to go when you are.

Key Accomplishments in 2011:

- 100% of the 1,910 planned preventative maintenance tasks were completed during the year.
- Over 300 priority one device repairs were completed in less than four hours.
- Highway Advisory Radio upgrade plans were completed.
- Major underground electrical repairs were completed as part of the ongoing Travel Time project.

Operators in the HRTOC control room as well as motorists around the region rely on hundreds of field assets for timely and accurate incident information. The HRTOC Traffic Management System covers virtually the entire interstate system on the south side of Hampton Roads and east of Lightfoot on the Peninsula, as well as some arterial roadways; a total of 113 roadway miles. This system consists of more than 500 roadside cabinets linked via 552 miles of fiber optic cable. The infrastructure provides power, control, and data, to (and from) 276 cameras [CCTV], 196 Dynamic Message Signs [DMS], 5 Highway Advisory Radio transmitters [HAR] and 5 reversible roadway gate entrances.

Due to the size and complexity of this infrastructure the maintenance group at the HRTOC is a critical component to ensure these devices are performing at the highest levels of service possible.

Through the practice of preventive maintenance, devices on the verge of failure are routinely identified and repairs are made prior to a total device failure. This effort helps reduce sudden device unavailability and equipment down-time.

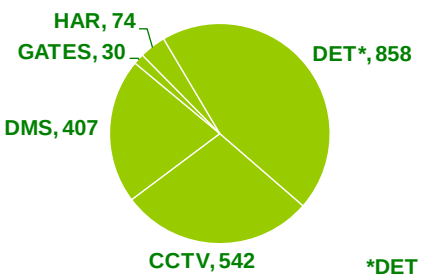
In 2011 almost 1,800 repairs were completed by the HRTOC field and systems maintenance departments. In addition to the five major device types shown in the chart below, work orders for building maintenance, utility locating, and projects were also included in the repair count.

The annual number of repairs completed has increased each year since 2008, with almost a 20% increase from 2010 to 2011.
One cause of the increase in repair counts is aging equipment.

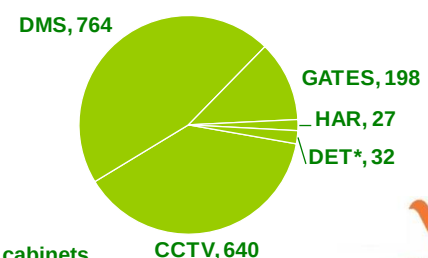
As fewer replacement parts become available additional strain is put on other components. The device type that required the most repairs in 2011 was DMS, with 43% of the total.

Repairs for DMS can require lane closures due to their locations over or very close to roadways. In 2011 there were 124 signs worked on during 118 lane closures. Scheduling lane closures is a complicated and time consuming process. Many factors must be taken into account such as the priority of the device, parts available, weather, and other ongoing projects. A new overhead DMS lane closure plan was created in 2011 to be implemented in 2012.

2011 Preventative Maintenance by Device



2011 Repairs by Device Type



*DET refers to maintenance for detector cabinets

VDOT Hampton Roads TOC

Maintenance

Keeping information sources ready to go when you are.

The HRTOC field and systems maintenance departments work hard to keep all possible devices available for use by motorists and control room operators. In order to do this they often work with members from the electronic maintenance, or depot, department. Depot level repairs are repairs to electronic equipment at the component level such as chips, resistors, and capacitors.

In the second quarter of 2011 over 270 depot level work orders were completed. That is the highest number of depot level work orders completed in one quarter since reporting began in 2006. This was due to parts coming from stripped signs removed from storage at the Pine Chapel facility. The depot department checked out each part, made any necessary repairs and then turned them over to field maintenance to use in fixes for current overhead signs.

This led to the completion of 216 DMS repairs, and a total of 493 repairs for all device types, in the second quarter. Both counts were also the highest number of repairs completed in one quarter since reporting began.

After removing the signs to be stripped, the maintenance group assisted in transforming the Pine Chapel facility from a storage area back into a usable work space by completing building and electrical modifications.

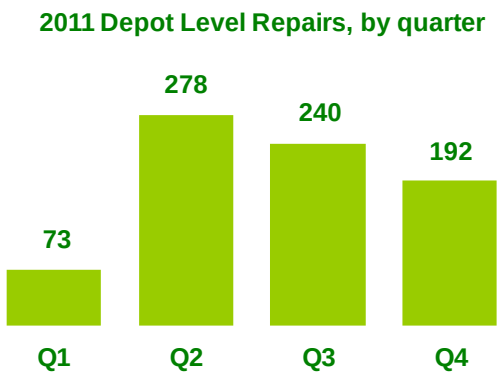
In addition to helping with the rework of the Pine Chapel facility, the maintenance group also provided support during the control room renovations here at the HRTOC.

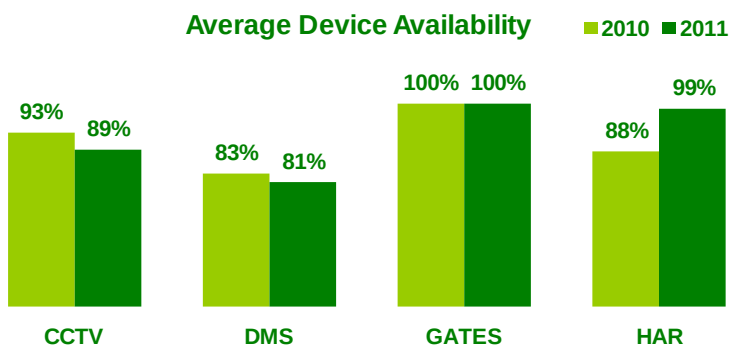
The increasing age of devices not only impacted the repair counts in 2011, it also played a role in the average device availability for CCTV and DMS, resulting in a decrease in availability from 2010 to 2011.

Several plans and projects are in place to improve device availability in the coming years. CCTV availability will improve after the completion of the switch to high definition cameras. Eventually, all 276 cameras in the HRTOC Traffic Management System will be replaced. The maintenance group is responsible for the development and implementation of this improvement to the CCTV. At the end of 2011, 25 (9%) of new high definition cameras had been installed.

Improvements to overhead signs will come from the DMS retrofit project. By keeping the existing DMS structures and sign housings and only replacing the internal components, the updates can be completed much faster than if entire signs were replaced at multiple locations.

The project has been separated into two phases. Phase 1 includes 44 signs on I-64 from Virginia Beach to Williamsburg and phase 2 includes 30 signs on I-264 in the HOV lanes. Work began on both phases of the DMS retrofit project in 2011 along with several other projects that relate to the HRTOC. These include the deployment of Intelligent Transportation Systems (ITS) on the Western Bypass (VA-164), detector upgrades throughout the Hampton Roads area and the ITS Communications Upgrade – phase 1.





VDOT Hampton Roads TOC

Control Room

Providing the information motorists need to stay on the go.

Key Accomplishments in 2011:

- Instrumental in the Eastern Region receiving the lowest error rate of the five VDOT regions for the VaTraffic Performance Measure Reporting, with an average of 9%.

- Developed a SSP Status graphic to enhance asset availability awareness.

- Revised the Standard Operating Procedure for the HOV-Reversible Roadway Gate Operations.

- Completed Recurrent Operations Training for all control room staff and promoted well qualified shift supervisors.

Assisting motorists to reach their destination, safely and quickly, is the ultimate goal of the HRTOC. This is done by providing timely and accurate information about roadway conditions through the use of sophisticated traffic management and communications equipment.

The HRTOC control room operators monitor video feeds from over 270 cameras, 24-hours a day, seven days a week, for changes in roadway conditions.

In 2011 the replacement of the video wall in the control room was completed.

The new video wall gives the operators more flexibility about what they choose to view. As shown in the graphic at the top of the page, smaller pictures from many cameras can be viewed at one time or a large picture from one camera can be viewed during an event.

In addition to the video wall replacement, the remainder of the control room as well as much of the HRTOC administration and operations buildings began renovation before the end of the year.

New paint, carpeting and updated work stations were installed in the control room in 2011. The arrangement of the work stations was also changed to decrease distraction to operators and provide additional useable stations during major events.

The HRTOC control room operators use dynamic message signs, highway advisory radio and the 511 system to communicate roadway condition updates to motorists.

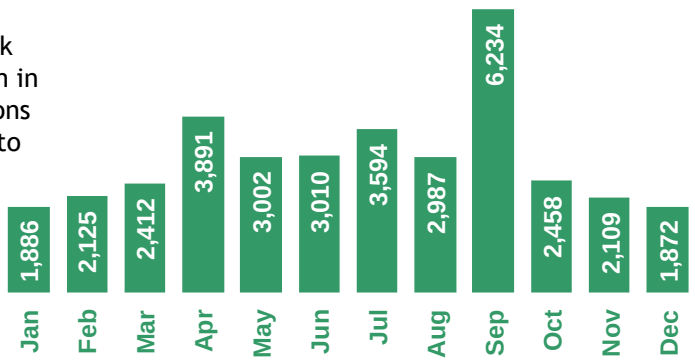
The 511 system, or 511 Virginia, provides motorists with the means to check traffic updates by using either the internet or phone.

VaTraffic, a web-based application that feeds the 511 system, is used by operators to monitor, track and assess activities affecting the Hampton Roads area roadways.

In 2011 operators made over 35,000 updates to VaTraffic entries. Entries are created as a result of incidents, such as vehicle crashes, planned maintenance events or weather events.

Hurricane Irene, that passed over Hampton Roads at the end of August, left many roadways flooded or covered in debris. Control room operators kept motorists up to date with the road conditions by making over 2,200 updates to VaTraffic entries in the first week of September.

2011 HRTOC Control Room Updates to VaTraffic, Monthly



VDOT Hampton Roads TOC

Control Room

Providing the information motorists need to stay on the go.

Highway Advisory Radio (HAR) is another important tool HRTOC control room operators use to communicate roadway conditions to motorists.

As events progress, change or are cleared, updates are submitted to HAR.

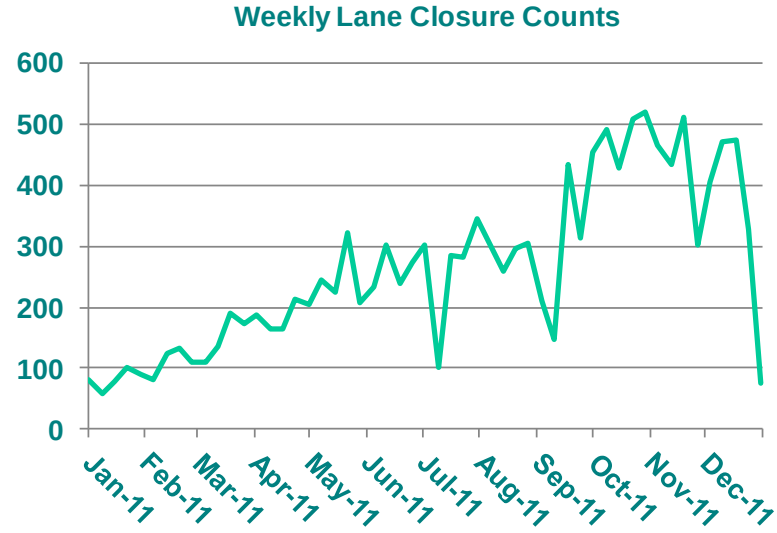
The total number of events and updates broadcast over HAR in 2011 was 31,644 - a 10% increase over 2010. One cause of the increase in HAR broadcasts was a high number of roadwork events that required lane closures.

As a result of the governor's transportation package, lane closure counts in Hampton Roads rose steadily throughout the year with the only noticeable decreases occurring during holidays when lane closures are lifted to ease congestion.

The HRTOC began using a new program in 2011, the Lane Closure Advisory Management System (LCAMS) to aid with monitoring and resolving conflicts of scheduled activities.

Control room operators logged 68,858 events into the incident database in 2011- a 6% increase over 2010. In addition to an increase in roadwork events, one of the biggest increases in event counts was in the event type Off Highway. This was due to a change in how Off Highway events are recorded in the incident database that created more options for operators.

Event Type	Description	Event Count
Disabled	Disabled vehicle	34,748
Roadwork	Stationary work zone, emergency maintenance, mobile lane closure, etc .	9,578
Crash	Vehicle collision	5,662
Choke Point	The HRTOC assisted with congestion management at area bridges, tunnels, etc.	4,820
Debris	Ladder, mattress, furniture, etc., in the roadway	3,418
Abandoned	Abandoned vehicle	2,276
Bridge Open	A scheduled opening, an in-progress opening, or a malfunction of the area bridges	2,135
Maintenance Action	Repairs and/or maintenance of HRTOC field equipment	2,049
HOV change	Manual change made to the HOV Reversible Roadway by HRTOC	2,044
Other	Police or medical emergency	1,050
Off Highway	Incident on city street or arterial roadway	803
Vehicle Fire	Vehicle fire that required extinguishing	215
Special Event	Event Concert, cultural event, etc.	58
Amber / Ozone Alert	The HRTOC alerted motorists via Dynamic Message Signs	2



Another change in how events are reported in the incident database that occurred in 2011 was the implementation of the associated incidents feature. Operators now have the ability to note when multiple events are related. For example, if there is debris in the roadway due to a crash or if a secondary crash occurred due to congestion from a disabled vehicle.

According to the Federal Highway Administration, nearly one quarter of all crashes are secondary collisions - collisions resulting from a prior incident. This is one of the reasons incident management is so important.

A new Incident Management Coordinator (IMC) joined the HRTOC in 2011. The IMC helps with communication between agencies to get incidents cleared quickly.

Incident management is also an integral component for policy and law changes, making the roads throughout our region safer for all citizens.

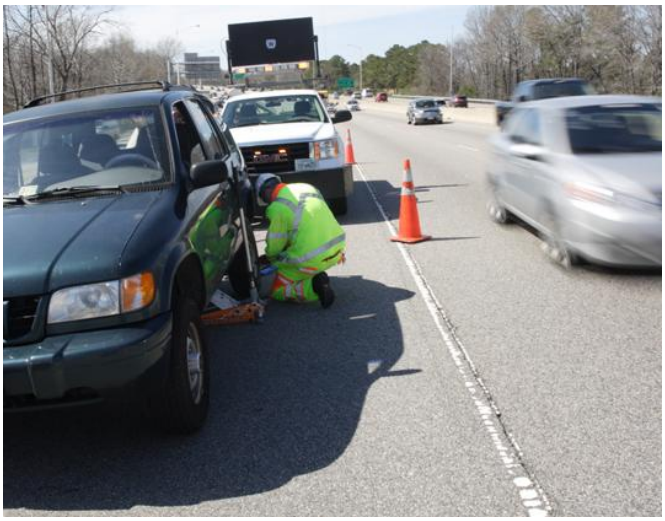
VDOT Hampton Roads TOC

Safety Service Patrol

Assisting motorists quickly and safely - reducing delays and improving travel in Hampton Roads.

Key Accomplishments in 2011:

- Participated in Quick Clearance Ad Campaign.
- Changed from pneumatic to battery operated impact guns to improve clearance times.
- Started using jump boxes for improved safety and quicker clearance.
- Standardized cones to the 12lb cone which improve safety on scenes.
- Converted arrow boards to LED lighting to increase motorist awareness.



The HRTOC Safety Service Patrol program has evolved from basic motorist assistance into a full incident management and emergency response program. In addition to providing assistance to travelers, the SSP detect events, clear obstructions and debris from the roadway, and provide traffic control for emergency responders.

The majority of events recorded in the HRTOC incident database are detected by the patrollers that are out on the roadway 365 days a year. In 2011 the SSP detected over 30,000 events. The most common type of event detected by the SSP was disabled vehicles. Since the response time for incidents detected by the SSP is usually very low those incidents are not included in the reported average SSP response time.

Quick response time helps lanes be reopened faster and minimizes congestion delays.

Although the average SSP response time increased from 2010 several steps were put in place towards the end of 2011 to help decrease average response time in the coming years.

One cause of the increase in SSP response time in 2011 was an increase in the number of incidents where a SSP was not available to immediately respond to the incident because they were already assisting another motorist.

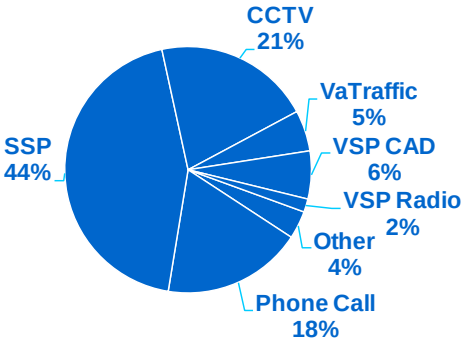
The most important step in decreasing average SSP response time was the expansion of the SSP routes. In December the patrol area increased from 6 routes, covering 73 centerline miles, to 8 routes covering 89 centerline miles.

To support the route expansion additional SSP personnel were hired and more trucks procured.

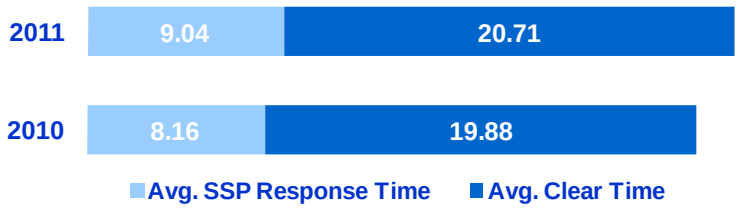
Another step taken to reduce average SSP response time was the creation of a “power shift” which was also implemented in December. The power shift allows one SSP on the South Side and one on the Peninsula to continue patrolling the roadways during the shift change of the other SSP. This ensures that there is always a patroller out on the roadways to respond to incidents.

Prior to the implementation of these two steps in December the average SSP response time was 9.2 minutes. Afterwards, the average dropped over a full minute to 7.9 minutes!

2011 Events by Detection Source



Average Incident Duration*, in minutes



*Only includes incidents where a SSP responded, but was not the detection source

VDOT Hampton Roads TOC

Safety Service Patrol

Assisting motorists quickly and safely - reducing delays and improving travel in Hampton Roads.

The third step taken in 2011 to reduce SSP response time was to continue using quarterly incident data in reconfiguring SSP routes for the most effective use of resources.

A great deal of data about each incident is logged in the HRTOC incident database, including the incident type and if assistance (as well as type of assistance) was needed.

In 2011, the SSP responded to more than 40,000 incidents. The most common types of assistance provided to motorists were helping change tires and dispensing fuel.

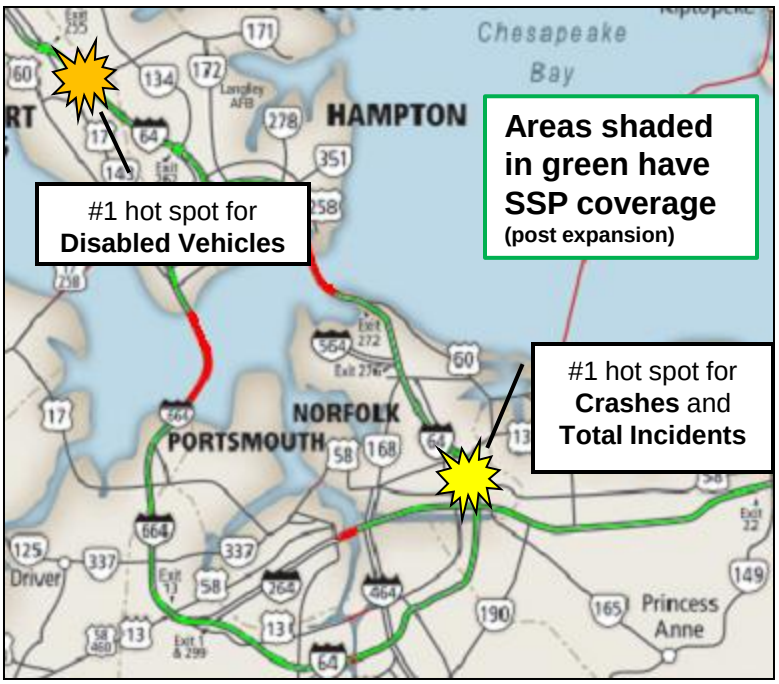
Another important piece of incident data recorded is location.

Roadway areas where the highest number of incidents occur are known as “hot spots”. These hot spots receive special attention - increased patrolling and additional data collection - so they can be studied for potential engineering solutions for improved driver safety.

In 2011, the number one incident hot spot for all incident types (crashes, debris, abandoned and disabled vehicles) was on I-64 between the I-64/I-264 Interchange and Northampton Boulevard, where over 2,300 incidents occurred on this area of roadway alone.

This area was also the number one crash hot spot in 2011, with 7% of total crashes occurring at that location.

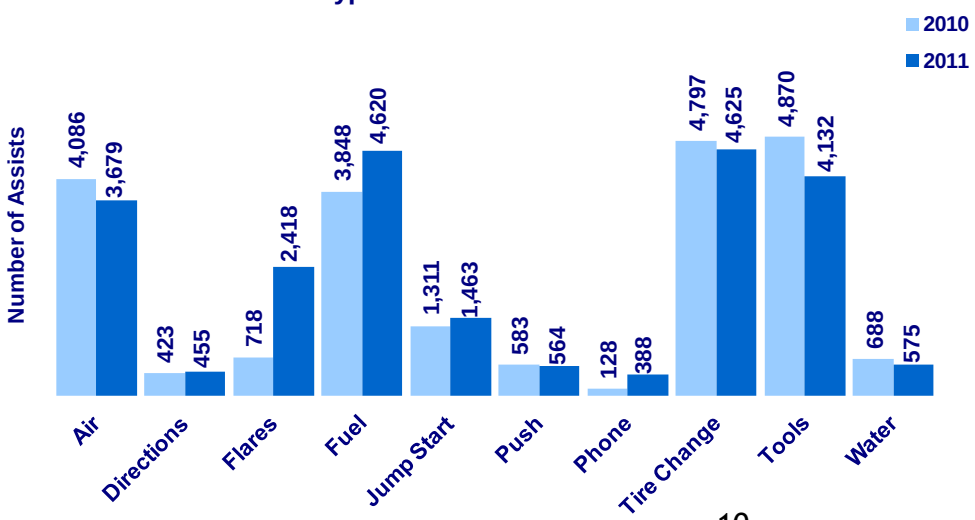
The number one hot spot for disabled vehicles was on I-64 between Jefferson Avenue and Ft. Eustis Boulevard, with 5% of total disabled vehicles.



The SSP expansion from 6 to 8 routes was executed with the top hot spots in mind. One route was added on the South Side and one on the Peninsula. Some of the existing routes were shortened for better coverage and to reduce the amount of time it takes for a patroller to respond from a nearby route during a major event. As a result, a total of 4 routes now converge at the location of the top incident hot spot.

On the Peninsula, the Pine Chapel facility was reopened so that patrollers do not have to pass through one of the area’s tunnels at the start and end of each shift. As another part of the expansion, routes were modified to remove passing through tunnels as part of the route, maximizing the time patrollers can spend on Hampton Roads highways assisting motorists and detecting and clearing events.

Types of SSP Assistance



VDOT Hampton Roads TOC

Know before you go

Motorist information that is easy to access and readily available.

Before you hit the road, check traffic conditions to avoid congestion and delays. Use these Know Before You Go information resources to check roadway conditions in Hampton Roads and beyond.

511 Virginia

By phone:
Dial 511 from any phone, cell or landline, and tell the 511 system what road you are traveling on or what route you are interested in, and you will get personalized statewide traffic information tailored specifically for you.

Via the Internet:
Visit www.VA511.org to view traffic cameras, set up email and text alerts, learn about road construction, bridge lifts and more, all at one convenient web location.

Highway Advisory Radio & TrafficLine

Tune into the Hampton Roads HAR, currently at channel 610 on the AM dial, for roadway conditions and updates.
If you are outside of the broadcast area, call the Hampton Roads TrafficLine at 757-361-3016, to receive the same report over the phone.

Lane Closure Advisory Management System (LCAMS)

Visit http://vdot.openlcams.com to view current and future scheduled lane closures statewide.

Thank you!

Motorist quotes about HRTOC Safety Service Patrollers

"Me and my sister were on our way to school when our tire popped. There was a lot of traffic and I didn't feel comfortable changing the tire because it was on the side with the traffic. SSP helped me out so much and saved me a lot time."

"Very courteous, excellent job. Had me on my way in no time"

"Thank you so much! I was scared to change my tire on a highway in the rain but the SSP saw me and helped."

"Very helpful and courteous. This is a great service and never thought too much about the VDOT vehicles I pass everyday until I needed them. Keep up the good work."

VDOT Hampton Roads TOC